



THE CITY OF SAN DIEGO

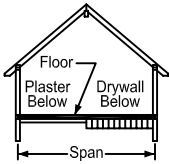
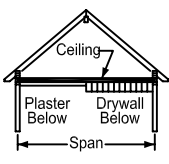
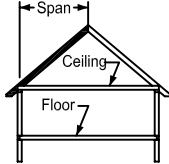
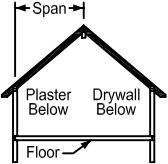
ROOF AND FLOOR FRAMING Span Tables

CITY OF SAN DIEGO DEVELOPMENT SERVICES
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INFORMATION
BULLETIN

133

OCTOBER 2008

Lumber Grade Douglas Fir Larch No. 2		ALLOWABLE SPANS* ¹ (Limited to assumed values and conditions)						
		Floor Joist		Ceiling Joist ⁴		Rafter ^{2, 3, 5}		
Span Cases								
Finish or Slope		With Plaster Below	With Drywall Below	With Plaster Below	With Drywall ⁶ Below	Not Supporting Ceiling	With Plaster Below	With Drywall Below
Deflection		L/240 L+D L/360 L	L/240 L+D L/360 L	L/240 L+D L/360 L	L/240 L+D L/360 LL	L/120 L+D L/180 L	L/240 L+D L/360 L	L/180 L+D L/240 L
Load Duration Factor		1.00	1.00	1.00	1.00	1.25	1.25	1.25
Nominal size Inches	Spacing Inches	DL=15PSF LL=40PSF	DL=12PSF LL=40PSF	DL=7.5PSF LL=10PSF	DL=5PSF LL=10PSF	DL=10PSF LL=20PSF	DL=15PSF LL=20PSF	DL=12PSF LL=20PSF
2x4	12	6'-9"	6'-9"	10'-6"	10'-9"	10'-9"	8'-0"	9'-0"
	16	6'-2"	6'-2"	9'-7"	9'-7"	9'-7"	7'-2"	8'-2"
	24	5'-2"	5'-4"	8'-4"	8'-4"	8'-1"	6'-5"	7'-2"
2x6	12	10'-7"	10'-6"	17'-9"	16'-9"	16'-9"	12'-9"	14'-3"
	16	9'-6"	9'-8"	16'-3"	15'-3"	14'-6"	11'-6"	13'-0"
	24	7'-9"	8'-0"	14'-6"	13'-30"	11'-9"	10'-0"	11'-5"
2x8	12	14'-0"	13'-10"	N/A	N/A	N/A	16'-9"	19'-0"
	16	12'-0"	12'-6"	19'-6"	N/A	18'-5"	15'-3"	17'-3"
	24	9'-9"	10'-0"	17'-3"	17'-6"	15'-0"	13'-3"	15'-2"
2x10	12	17'-0"	17'-6"	N/A	N/A	N/A	N/A	N/A
	16	14'-9"	15'-3"	N/A	N/A	N/A	19'-6"	N/A
	24	12'-0"	12'-3"	N/A	N/A	18'-3"	17'-0"	19'-3"
2x12	12	19'-9"	N/A	N/A	N/A	N/A	N/A	N/A
	16	17'-3"	17'-9"	N/A	N/A	N/A	N/A	N/A
	24	14'-0"	14'-3"	N/A	N/A	N/A	N/A	N/A
2x14	12	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	16	19'-2"	19'-9"	N/A	N/A	N/A	N/A	N/A
	24	15'-6"	16'-0"	N/A	N/A	N/A	N/A	N/A

DESIGN VALUES:

Lumber Grade: D.F./Larch #2
Allowable bending stress: 900 PSI
Allowable shear stress: 180 PSI
Modulus of Elasticity: 1,600,000 PSI

*Values based on repetitive member use

FOOTNOTES:

- "N/A" designation is for spans over 20 feet. Single pieces of sawn lumber of this length are generally special stock order items and have not been shown.
- Minimum slopes 1/4:12, maximum slope 4:12. Roof surfaces having a slope less than 1/4" in 12" are considered to be flat roofs. Flat roofs must be designed to accommodate the potential for ponding of water. This information bulletin may not be used for the design of flat roofs.
- Load Duration Factor = 1.25 (no floors above).
- Uninhabitable attics without storage.
- Tile roofing materials shall conform to DL Assumption.

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Open Beam Ceiling System

Open beam framing systems designed based on use of planks shall be in accordance with AF & PA Wood Construction Data No. 4. (CBC, Section 2306.1.2). The span table below indicates allowable spans for various open beam framing members located at the roof. Horizontal shear capacity of roof diaphragm utilizing decking and open beam ceiling system must be based on specific design criteria specified in AF & PA No. 4. Additional structural wood panel sheathing will be required based on the AF & PA No. 4 which can be downloaded from the following website: www.awc.org/pdf/wcd4.pdf.

OPEN BEAM CEILINGS ^{1,2,3,4}		
Nominal Size (inches)	On Center Spacing (inches)	Douglas Fir Larch No. 2 L/180 L+D, L/240 L DL=15PSF, LL=20PSF
4x4	24	9'-3"
	32	8'-6"
	48	7'-3"
4x6	24	14'-9"
	32	13'-3"
	48	11'-0"
4x8	24	19'-6"
	32	17'-6"
	48	14'-6"
4x10	24	N/A
	32	N/A
	48	17'-9"

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3. Load Duration Factor = 1.25 (no floors above).
4. Tile roofing materials shall conform to DL Assumption.

ALLOWABLE SPANS FOR WOOD STRUCTURAL PANEL SHEATHING ^{1,2} (Table 2304-7(3))

Wood Structural Panel Identification Index		Maximum Span (inches)	
		Roof ³	Floor ⁴
12/0	Blocked ⁵	12	0
	Unblocked	12	0
16/0	Blocked ⁵	16	0
	Unblocked	16	0
20/0	Blocked ⁵	20	0
	Unblocked	20	0
24/0	Blocked ⁵	24 ⁶	0
	Unblocked	20	0
24/16	Blocked ⁵	24	16
	Unblocked	24	0
32/16	Blocked ⁵	32	16 ⁷
	Unblocked	28	0

FOOTNOTES:

1. Applies to panels 24 inches or wider
2. Floor and roof sheathing conforming with this table shall be deemed to meet the design criteria of CBC section 2312.
3. Uniform load deflections limitations 1/180 of span under live load plus dead load, 1/240 under live load only.
4. Panel edge shall have approved tongue-and-groove joists or shall be supported with blocking unless 1/4 inches minimum thickness underlayment or 1-1/2 inch of approved cellular or lightweight concrete is placed over the subfloor, or finish floor is 3/4 inch wood strip. Allowable uniform load based on deflection of 1/360

of span is 100 pounds per square foot (psi) except the span rating of 48 inches on center is based on a total based on a total load of 65 psf.

5. Tongue-and-groove edges, panel edge clips (one mid-way between each support, except two equally spaced between supports 48 inches on center), lumber blocking, or other. Only lumber blocking shall satisfy blocking diaphragms requirements.
6. For 1/2 inch panel, maximum span shall be 24 inches.
7. May be 24 inches on center where 3/4 inch wood, strip flooring is installed at right angles to joist.
8. May be 24 inches on center for floors where 1 1/2 inches of cellular or lightweight concrete is applied over the panels.